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ANNUAL REPORT
to the
MASSACHUSETTS WATER RESOURCES COMMISSION
by the
Director and Chief Engineer
Division of Water Resources
for the
Fiscal Year Ending - June 30, 1979

Publication #11,522-32-100-9-79-CR
Approved by Alfred C. Holland, State Purchasing Agent

INTRODUCTION

Chapter 21, Section 8 of the General Laws of the Commonwealth, enacted in 1956, established the existence, the duties and the jurisdiction of a Water Resources Commission under whose supervision and control would be the Division of Water Resources. Subsequently, in 1966, Chapter 685 established a Division of Water Pollution Control as the second operating agency of the Commission. The current make-up of the Commission was instituted pursuant to Chapter 706, of the Acts of 1975, which extensively amended Chapter 21.

The mandates were clear. The Commission was charged with the responsibility for the study of the needs, supplies and resources of the Commonwealth with respect to private and public use of water, water conservation and flood damage prevention.

This report intends to summarize the progress by the Division of Water Resources during Fiscal Year 1979, in response to those mandates.

Supervisory responsibility for the Division is incorporated in the following individuals who constitute the Water Resources Commission as of June 30, 1979.

Co-Chairman - Richard E. Kendall, Commissioner
Department of Environmental Management

Co-Chairman - Anthony D. Cortese, Commissioner
Department of Environmental Quality Engineering

Department of Food & Agriculture Representative
Frederick Winthrop, Jr., Commissioner

Designee: Warren Colby, Assistant Commissioner
Department of Food & Agriculture

Department of Commerce & Development Representative
James Carlin, Commissioner

Designee: William Tsaffaras
Department of Commerce & Development

Department of Fisheries, Wildlife & Recreation Vehicles Representative
Stephen Chmura, Commissioner

Designee: Paul S. Mugford
Division of Fisheries and Wildlife

Department of Metropolitan District Commission Representative
Guy Carbone, Commissioner

Designee: Julia O'Brien
Metropolitan District Commission

Public Members - Peter C. Karalekas
322 Prospect Street
East Longmeadow, Mass., 01028
Appointment expires 11/29/80

Richard Noss
106 Centre Street
Milton, Mass., 02186
Appointment expires - 11/29/79

Rita Barron
76 Walden Street
Newtonville, Mass., 02160
Appointment expires - 11/29/81

Richard Chapman
Hobbs Road
East Princeton, Mass., 01517
Appointment expires - 7/31/81

Nathan Tufts, Jr.
101 River Road
Merrimacport, Mass., 01860
Appointment expires - 12/15/81

PERSONNEL OF THE DIVISION (as of June 30, 1979)

Kennedy, Charles F.	Director & Chief Engineer
Pyle, O. Fletcher	Associate Civil Engineer
Doucette, Thomas F.	Associate Civil Engineer
Chandler, Emerson H.	Chief Planner
Shapiro, Sheldon	Associate Environmentalist
Beshara, Michael L.	Principal Civil Engineer
Krol, William A.	Principal Civil Engineer
Maguire, Kevin B.	Senior Civil Engineer
Kalishes, Vincent	Principal Planner
Grice, David	Resources Planner
Bones, William F.	Resources Planner
Connor, Joseph M.	Resources Planner
Brown, David	Senior Marine Fisheries Biologist
Humphries, Stanley	Land Use Administrator
Hayward, David F.	Principal Right-Of-Way Agent
Struzziero, Ernest J.	Assistant Civil Engineer
Constable, Katherine	Land Use Administrator
Levine, Nathan R.	Senior Civil Engineering Draftsman
Tanzer, Philip	Senior Statistical Clerk
Brosnahan, Helen R.	Principal Clerk
Lafontant, Rose	Junior Clerk Typist
O'Keefe, Kellie	Junior Clerk Typist

ADMINISTRATIVE APPROPRIATIONS

Fiscal Year	Appropriations
1959	$ 70,800
1960	75,915
1961	79,475
1962	88,920
1963	117,402
1964	129,649
1965	139,181
1966	140,573
1967	127,946
1968	153,411
1969	190,412
1970	174,705
1971	202,740
1972	213,808
1973	227,300
1974	247,899
1975	259,854
1976	262,155
1977	345,000
1978	379,152
1979	300,218

In addition, the following sums were appropriated for the operation of Interstate Flood Control Commission:

Connecticut River Valley Flood Control Commission Merrimack River Valley Flood Control Commission	$49,500

These funds were used for the payment of the Commonwealth's share of operating the respective Flood Control Commissions and the annual tax and economic losses to the upstream states caused by the construction of flood control reservoirs.

Other Major Appropriations:

Water Planning	$ 54,000
Flood Control	102,200
P.L. 566 Maintenance	47,300
Federal Cooperative Studies	146,200
New England River Basins Commission	44,483
Ipswich River Watershed District	1,000

TOTAL BUDGET APPROPRIATION

Fiscal Year	Appropriation
1979	$744, 901

PLANNING PROGRAM SUMMARY

COORDINATION WITH FEDERAL AGENCIES

CORPS OF ENGINEERS

Section 22 Study

Study Authority - (PL 93-251) - Section 22, Water Resources Development Act of 1974
DWR Authority - Chapter 21 - S. 9 Vote of WRC 1/9/78
Starting Date - March 14, 1979
Completion Date - November, 1979
Current Status - Scope of work, selection of consultant
Objective - Inventory of Abandoned Water Supply Sources
Nature of DWR participation - Selection of Study Subject alternatives, design and approval of scope of work. Review of interim work product and Final Draft. Facilitate interagency coordination.

Average Annual Federal Funding - $60,000

Housatonic Urban Study

Study Authority - Congressional Resolution - House Comm. on Public Works Apr. 11,197
DWR Authority - Chapter 21 - S. 9 Vote of WRC - 2/21/78
Starting Date - October, 1978
Completion Date - April, 1982
Current Status - Reconnaissance report submitted

Preliminary Objective - Flood control and ground and surface water supply investigations.
Nature of DWR Participation - Determine Scope, review preliminary work products and final draft. Facilitate interagency coordination.

A AFF $183,000

Connecticut River Streambank Erosion Study

Study Authority - (PL93-251) - Comm. on Public Works - U.S. House of Rep. Aprl 11,197
DWR Authority - Chapter 21, S. 9
Starting Date - April 30, 1975
Completion Date - June, 1979
Current Status - Draft Report - Jan. 1979
Objective - Causes and solutions to streambank erosions - Connecticut River - Turners Falls to N.H.)
Nature of DWR Participation - Review of Work Products

AAAF $78,000

Pawcatuck River - Narragansett Bay Study

Study Authority - Sen. Res. 5/8/67, Sen. Res. 3/29/68, Sen. Res. 4/23/68 Sen. Res. 5/28/68, House July 10, 68, Sen. 2/2/70, Urban Study PL92-500, Feb. 1973.

DWR Authority - Chap. 21, S. 9.
Starting Date - 1969 - Re-oriented as Urban Study 1974
Completion Date - Sept, 1981
Current Status - Draft revision
Objective - Water Supply Study
Nature of DWR Participation - Selection of Study objectives, agency coordination, review, and suggest revision of draft materials prepared by consultants.
AAF $454,000

Routine Monitoring of Existing C.O.E. Projects

Project Authority - Various Congressional Authorization for Civil Works Projects
DWR Authority - Chap. 21, S. 9
Current Status - Ongoing
Objective - Review operation and proposed changes to authorized plans and existing C.O.E, projects, encourage maximum beneficial recreational use of O.E. areas.
Nature of DWR participation - Approve licensing of recreational use - 10 C.O.E. sites - totaling 12,000 acres

Evaluation of Small Projects and Emergency Work

Project Authority - 1966 Flood Control Act - Connecticut River Comprehensive Study, etc.
DWR Authority - Chap. 21, S.9
Current Status - Ongoing
Objective - Review and coordination with WRC policy
Nature of DWR Participation - Review and evaluation of project proposals such as the North Nashua Channel Improvement Project, Westfield Local Protection Project, etc.

.S. SOIL CONSERVATION SERVICE

Massachusetts River Basin Planning Program

Study Authority - Sect. 6 PL 83-566
DWR Authority - Chap. 21, S.9 - Vote of WRC 12/11/78
Starting Date - June13, 1978
Completion Date - 1983 (subject to review this date)

Current Status - Community meetings in Housatonic and North River area to determine basin planning objectives.
Objective - Develop basin-wide goals and policy for resource management.
Nature of DWR Participation - Participate in formulation of basin work plan. Facilitate public participation, evaluation, coordination and review of work program.

AAFF $355,000

Natural Resources Planning Program

Study Authority - PL83-566
DWR Authority - Chap. 21 - S9
Starting Date - 1974
Completion Date As of Jan. 1, 1979, 35 communities had entered this program.
Current Status
Objective - Inventory towns natural assets and develop natural resource quality index.
Nature of DWR Participation - Review Drafts

AAFF $45,000

Resource Conservation and Development Areas

Study Authority - PL 87-703
DWR Authority - Chap. 21 - Sect. 9
Starting Date - Planning Approval, 1968 - Berk. Franklin commenced 1969 -
Completion Date - Proposed Termination 1979 (?)
Current Status - The Berkshire Franklin and Pilgrim RC & D areas are ongoing.
Objective - Planned regional development for wise use of resources
Nature of DWR Participation - Review of projects involving water resources.

AAFF $350,000

P.L. 566 Watershed Program

Study Authority PL. 83-566
DWR Authority Various legislative Acts and votes of Water Resource Commission
Starting Date
Completion Date Active planning is continuing only on West Branch of the Westfield
Current Status and Upper Quaboag Projects
Objective - Flood prevention - proper land use management - multiple purpose reservoirs,
Nature of DWR Participation - Participation in public meetings - revision and review of draft plans - coordinate inter-agency participation.

Flood Hazard Analyses

Study Authority PL 83-566
DWR Authority Chapter 21, Sect. 9
Starting Date
Completion Date Ongoing Have completed reports on 10 study areas.
Current Status
Objectives Define existing floodplains - provide data for flood plain management
Nature of DWR Participation - Selection of priorities and review of draft reports

NEW ENGLAND RIVER BASINS COMMISSION's Coordination

1) Connecticut River Cumulative Impacts Study

Study Authority - Water Resources Planning Act of 1965 - PL 89-80
DWR Authority - WRC designation ?
Starting Date Dec. 21, 1977 approved by NERBC - Conn. River Coordinating Group
Completion Date - June, 1980
Current Status - Awaiting action on final report
Objective - Develop information/data management system for continuous planning and impact evaluation in Conn. River Basin
Nature of DWR Participation - Policy review, coordination and technical advice and assistance. Evaluation of proposals and work products of consultants, COE and SCS.
AAFF $33,000

2) Section 73 - Study on Connecticut River (non-structural flood control)

Study Authority - Sect. 73 of 1974 Water Resources Development Act PL 93-251 and Water Resources Planning Act of 1965, Sect. 103 of PL 89-80
DWR Authority - WRC designation ?
Starting Date - August, 1975 - Water Resources Council
Completion Date - June, 1980
Current Status - Under review
Objective - Determine efficiency of non-structural measures and evaluate federal implementation and funding
Nature of DWR Participation - Membership in coordinating and work groups. Study scoping. Review and comments on proposals and work products.
AAFF $128,000

3) Special Tasks as Assigned
e. g. Floodplain Management Task Force, Merrimack, Thames and Housatonic overviews.

STATE LEVEL ACTIVITIES

Title III - Water and Related Land Planning Program

Program Authority - PL 89-80
DWR Authority - Governor's designation of Water Resources Commission
Starting date - FY 1968
Current Status - Prepared funding request FY 1980
Objective - To fund the state water and related land planning program which has as its objective the creation of coordinated water resources planning and management.
Nature of DWR participation - Cordination with the U. S. Water Resources Council, preparation of funding requests, and review of proposed federal policies relating to water resources.

208 Plan Review and Certification

Study Authority - Sect. 208, P. L. 92-500
DWR Authority - Assigned by Commissioner Kendall
Starting Date - August, 1977
Completion Date - July, 1980?
Current Status - Final review completed for several regional areas.
Objective - Produce areawide waste water plans
Nature of DWR participation - Review of draft plan elements - 45 day review of draft plan - review of final plan for certification.

A-95 Review

Program Authority - Office of Management and Budget Circular - A-95
DWR Authority - Assigned by Commissioner Kendall
Starting Date - Ongoing
Current Status - Ongoing
Objective - Coordination of planning and development within and among federal, state and local levels of government
Nature of DWR participation - review of weekly A-95 monitor. Participate at weekly inter-divisional A-95 meeting to obtain details on items of agency concern, submit formal comments on proposals adversely affecting water resources.

Environmental Monitor Review

Program Authority - MGL, Chapter 30, ss. 61,2.
DWR - Assigned by Commissioner Kendall
Starting Date - circa 1974

Completion Date - Ongoing
Current Status - Ongoing
Objective - To insure that the provisions of Chapter 30, Sections 61 and 62 are complied with and that the environmental impacts of projects involving state action are correctly identified and evaluated.
Nature of DWR Participation - The Environmental Monitor is reviewed and those notices involving significant water resources are subjected to intensive review.

Review of Commission Consultants work Product.

Program Authority - MGL, Chapter 21, Sect. 11,
DWR Authority - Assigned by Director as party to contract
Starting Date - circa 1956
Completion Date - Ongoing
Current Status - none in progress
Objective - To insure that the multi-objective viewpoint is embodied in studies by consultants,
Nature of DWR Participation _ Work on contract proposals and evaluation of work products as submitted, e.g., The Metcalf & Eddy Allocation Study

Proposing Needed Legislation or Regulations

Authority - MGL Chapter 21, S.S. 9,11
DWR Authority - Annual Request for Director
Starting Date - Ongoing
Completion Date - Ongoing
Current Status - proposing guidelines for licensing PL 566 sites.
Objectives - To insure that sufficient legislative and regulatory authority exists to facilitate planned programs.
Nature of DWR Participation - proposing legislation such as the Charles River Natural Valley Storage enabling legislation, PL. 566 licensing authority, etc.

Miscellaneous Routine Duties

Providing information to other agencies and the public by maintaining and distributing library materials and by answering telephone requests for information.

Working on publications, e.g., the second edition of Groundwater and Groundwater Law, The Wetlands Guide, and a Guide to Public Ponds (in draft form).

COORDINATION WITH FEDERAL AGENCIES

Corps of Engineers

Section 22 Study

The consultant is collecting the necessary data, making field inspection and contacting local officials of forty-four cities and towns supplied wholly or in part by the MDC Water Division in preparing order of magnitude cost estimates for reactivating formerly used potable public water supplies. Those sources with a yield in excess of 100 gallons per minute that have been abandoned or placed in emergency reserve are being studied.

During FY 1980, three progress meetings will be held involving the Corps of Engineers, the consultant, the Division of Water Resources and other state agencies. This study follows the recommendations of the Massachusetts Water Supply Policy to conserve all significant local water supply sources.

Housatonic Urban Study

The plan of work for this investigation is not complete. The Division has strongly supported placing greatest emphasis on evaluating the potential for ground water development in light of the presence of PCB contamination in the Housatonic River. It has also emphasized long range water supply solutions for the Pittsfield SMSA.

It is hoped that state participation can be facilitated by a future legislative appropriation.

Connecticut River Streambank Erosion Study

This study has been completed with the result that a section of river bank in the Town of Northfield is now being considered for a protective bank stabilization project.

Pawcatuck River - Narragansett Bay Study

This study was completed and a report released in January 1979, after inclusion of revisions suggested by the Division. The report covers sixty-five cities and towns in southeastern Massachusetts developing feasible structural and/or non-structural water supply alternatives to meet the domestic and industrial water demands of the region through the year 2020.

The water supply needs of each community were analyzed and alternatives developed to meet these needs. After considering the possible alternatives, a single recommended program was developed to achieve the most economical and environmentally acceptable solution. The most suitable institutions to implement the recommended alternatives were also identified.

It should be pointed out that no plan for state or federal action was promulgated and the individual communities may or may not utilize the recommended alternatives.

Soil Conservation Service
Massachusetts Water Resources Study

The Type IV Massachusetts Water Resources Study, a cooperative effort between the U. S. Department of Agriculture and the Massachusetts Water Resources Commission, is being conducted to provide information and technical data for a comprehensive plan for the development and use of the Commonwealth's water and related land resources. Investigations and analyses cover such items as identification of potential and existing upstream reservoir sites, determination of present land use with projections for future land use, identification of selected flood-prone areas, with alternatives for providing flood protection, identifications of existing wetlands in selected areas based on soils, and delineation of selected flood plains.

Four regional reports, Berkshire, Connecticut, Central and Coastal, were prepared as part of the study. The Connecticut River, Central and Coastal Reports were released during FY 1979. Specific items considered in each report are land use, flood damages and protection, erosion and sediment, recreation, fish and wildlife, wetlands, water supply, and water quality. These documents are intended for professionals in local, state, and federal agencies for planning the conservation and development of water resources.

Massachusetts River Basin Planning Program

The Massachusetts River Basin Planning Program (MRBPP) was initiated during FY 1979 by the U. S. Department of Agriculture in cooperation with the Mass. Water Resources Commission. The Soil Conservation Service will coordinate the U. S. Department of Agriculture inputs to the program. The Division of Water Resources is the coordinating agency for the state inputs. The MRBPP will assist small groups of communities within a watershed in the development of a comprehensive water and related land resources plan. It seeks to provide planning assistance to groups of communities in smaller hydrologic units.

The Soil Conservation Service has prepared a Plan of Work and will develop information on estimates of flood problems, sediment and erosion problems, prime agricultural land, wetlands, water quality, water supply and recreational needs. During FY 1979, draft plans of study were prepared for the Upper Housatonic and North/South River Basins and public meetings were held. The Upper Housatonic study will be coordinated with the Corps of Engineers' Housatonic Urban Study. All of the MRBPP studies will be coordinated with the implementation of the Massachusetts Water Resources Commission's Water Resource Management Planning Regulations.

Flood Hazard Analyses

Upper Quaboag River

The flood hazard analyses report for the Upper Quaboag River was completed in FY 1979. The study was prepared by the Soil Conservation Service in cooperation with the Massachusetts Water Resources Commission, the Southern and Northwestern Worcester County Conservation Districts and the towns of Brookfield, East Brookfield, Spencer, and West Brookfield. Alternatives for flood plain management, flood hazard areas, and flood profiles were prepared for the following streams: East Brookfield River, Seven Mile River, Mill River, Turkey Hill Brook, Cranberry River and Great Brook.

(PL 566) Watershed Flood Prevention Program

I. Operational Watersheds

1. Clam River - Berkshire County

All structures complete.

2. Washington Mountain Brook - Berkshire County

One of the three planned sites has been completed. The Commission voted on September 25, 1979 to continue sponsorship of the Washington Mountain Brook Project based on the supplemental watershed plan subject to further investigations of ground water sources to determine if sufficient quantity and quality exist to provide an adequate water supply for the town of Lee. A contract was signed with B & H Drilling Company on December 11, 1979 for drilling test wells.

3. West Branch Westfield - Berkshire & Hampden Counties

Entire project under review. Awaiting sponsors decision on whether to proceed with proposed project.

4. Quaboag River - Worcester County

Four structures and floodwall completed. The contract for the Moose

Hill Reservoir Site in Spencer and Leicester was signed with Coughlan Construction Company, Inc. on March 15, 1979, and construction started in March, 1979.

5. SuAsCo - Middlesex & Worcester Counties

Final site under construction. Site 95% completed.

6. Baiting Brook - Middlesex County

Environmental studies completed and accepted. Design of proposed structure underway.

7. Diamond - Brook - Norfolk County

Environmental studies completed and accepted. Proposed projects designed and construction documents being prepared.

II. Planning Phase

1. Ten Mile - Bristol & Norfolk Counties

Work plan being developed in Watershed. Hydrologic and Hydraulic studies have been completed. Investigations of potential alternatives are underway.

2. Weweantic - Plymouth County

Preliminary planning now completed indicates a feasible project could be planned. Lack of local interest indicates no further planning be done at present.

3. Munn Brook - Hampden County

Lack of local support and present conditions indicate a feasible project cannot be planned. The sponsors have been asked to consider withdrawal of their application.

4. Konkaput Brook - Berkshire County

Lack of local support and present conditions indicate a feasible project cannot be planned. The sponsors have been asked to consider withdrawals of their application.

5. Mill River - Hampshire County

Lack of local support and present conditions indicate a feasible project cannot be planned. The sponsors have been asked to consider withdrawal of their application.

6. Green River - Berkshire County

Preliminary studies indicate that a feasible project could be planned. Local interest to date does not support further planning.

7. Ipswich River - Essex County

Preliminary studies indicate that a feasible project could be planned. Local interest to date does not support further planning.

III. Proposed Projects - None

New England River Basins Commission

Connecticut River Cumulative Impacts Study

The Cumulative Impacts Study was conducted in the Connecticut River Basin. At the urging of citizen groups, a study was designed to examine the role of comprehensive computer modeling as a decision-making tool. Early supporters envisioned the emergence of an integrated "ecologic mathematical model" of the Connecticut River Basin.

The consultant, Resource Analysis Incorporated, confirmed the state view that such a model was impossible of achievement. The existing simpler models, currently utilized by state and federal agencies, were confirmed as the most legitimate use of mathematic modeling technology available now or in the foreseeable future. While pursuit of an all encompassing modeling system will not be continued, utilization of existing mass balance/safe yield, low flow simulator, flood flow simulator and water quality models will be encouraged.

Section 73 Study on Connecticut River

The so-called Section 73 Study in the Connecticut Basin is designed to evaluate the potential role of non-structural flood management methods. It is planned to provide general guidance to the U. S. Water Resources Council, as well as identifying viable programs in selected communities in the Basin states.

During the fiscal year, the states exerted strong influence to upgrade the local utility of these studies. A revised Plan of Work was developed and is being implemented. A practical method of preventing the construction of flood damageable structures will be sought. The feasibility of relocating existing flood prone developments will be examined in terms of engineering economic and social considerations.

U. S. Geological Survey

Cooperative Basin Study Program

The Basin Studies Program is a cooperative venture between the U. S. Geological Survey and the Water Resources Commission. In FY 1979, hydrologic atlases were completed for the Mystic, Shawsheen, and Merrimack river basins. These atlases should be released sometime in FY 1980. The atlas report for the comprehensive study of ground water resources of Cape Cod was being finalized in FY 1979. The water quality and digital model of groundwater resources have also been completed. This four year, $700,000 study has been funded jointly by Barnstable County, the Water Resources

Commission, U. S. Geological Survey and the National Park Service. The Water Resources Commission, in coordination with the U. S. Geological Survey, will continue administration of the study toward the objective of testing alternative methods of developing and managing the ground water of Cape Cod.

The Nantucket and Martha's Vineyard hydrologic atlases were completed during FY 1979 and should be released in FY 1980. Field work continued in the SuAsCo and Blackstone River Basins during the fiscal year. The study in the French-Quinebaug River Basins will commence in FY 1980. (See Figure 1).

National Water-Use Data Program

The National Water Use Data Program is a new cooperative program between USGS and the Division of Water Resources. The objective of the program is to build a data base of accurate and reliable water-use data as part of overall management of water resources and to contribute aggregated water-use data to the National Water Use Data Program. Three prototype state programs, including one from Connecticut, have been issued to the Division. The Connecticut prototype will serve as a model for Massachusetts' program and provide a starting point for discussion of the program.

During FY 1979, the program was initiated in Massachusetts, at an interagency meeting in April. The Division and U. S. Geological Survey introduced the program to all water resource and related agencies in the state. After meetings between the District Office of USGS and the Division, a formal interagency task force was decided against at the present time. The design and implementation of the program will continue in FY 1980, although no data collection will take place. The work plan for FY 80 includes preparation of a list of water-use data elements, functional water uses and an inventory of sources of water use data.

National Flood Insurance Program

As the state coordinating agency for this program, we have been involved in fostering participation, setting priorities for rate studies and working with consultants performing the rate studies.

There are 317 communities presently participating in the program. Seventy-six are in the regular program and the remaining 241 communities are in the emergency program. At the present time, three communities are under suspension for failure to adopt the required land use control measures: Longmeadow, Hadley and Holbrook.

This division, in cooperation with the regional office of the federal insurance administration and the Massachusetts Building Code Commission, has amended the state building code to conform to the minimum building requirements of the federal regulations.

Thirty-seven flood insurance rate studies were assigned to contractors during FY 1979. Fifteen TYPE 19 studies, which update past rate studies, were completed in FY 1979. We have long sought to have such contracts let on a river basin basis and are gratified by the fact that this method is now most often used. Another staff recommendation has been the use of accurate topographic mapping employing orthophotogrammetric methods. The contractor working in the Nashua Basin will utilize and enlarge upon such accurate topographic mapping provided by this Division, pursuant to our own wetland restriction program. In developed areas, we hope that two foot contour base maps will become a basic water resources planning tool. (See figure 2).

REGULAR PROGRAM COMMUNITIES

Abington
Acton
Agawam
Alford
Auburn
Barnstable
Bedford
Blackstone
Bourne
Braintree
Brookline
Canton
Dartmouth
Dennis
Duxbury
Fairhaven
Falmouth
Hadley
Heath
Holbrook
Lexington
Lincoln
Marion
Mansfield
Marshfield
Mattapoisett
Milton
Nahant
Needham
New Bedford
Newbury
Newburyport
Newton
Norfolk
North Reading
Northampton
Pittsfield
Provincetown
Quincy
Randolph
Rehoboth
Salem
Salisbury
Scituate
Somerset
Swampscott
Swansea
Tewksbury
Truro
Walpole
Wareham
Westfield
Westport
Westwood
West Sprinfield
Williamstown
Winthrop
Yarmouth

Communities which joined the Regular Program during FY 1979:

Andover
Attleboro
Berkley
Boxborough
Brockton
Chicopee
Concord
Dedham
East Longmeadow
Goshen
Hampden
Longmeadow
Lowell
Mashpee
Maynard
Millis
Norton
Petersham
Sharon
Wakefield
West Newbury
Wilbraham

STATE LEVEL ACTIVITIES

Water Resources Management Planning Regulations

The Water Resource Management Planning Regulations were adopted by the Water Resources Commission in December, 1978. The purpose, according to regulations, "is to facilitate the development of comprehensive water resources management plans for Massachusetts and to assure that such plans are based on local, regional and state assessments of water needs and water resources; are in conformance with the Massachusetts Water Supply Policy; and are based on adequate data aggregated by river basins. The plans are intended to provide a basis for state and federal action; to support and assist in providing for legitimate local needs for water supply, recreation and waste disposal, and other water-related uses and activities; to encourage water conservation; for flood control programs, drought contingency planning; and to provide a basis for legislative recommendations where appropriate."

The Water Resources Commission, beginning in 1980, will prepare and annually update a State Water Resource Management Plan, including plans for each river basin in Massachusetts. The state plan will be based on local plans submitted by each municipality of the Commonwealth. The content of the local plans will include: a demographic profile of the river basin, per capital consumption and quantities of water used for industrial, institutional, commercial, residential, municipal, agricultural and other uses, current and projected water supply sources, profile of the river basin, discussion of governmental and other entities within each basin with water resources management, operations and/or regulatory authority, description of quality of surface and ground water, effectiveness of structural and non-structural means of flood damage reduction and water requirements for recreation, fish and wildlife and related utilization. The water supply element of the local water resource management plans will be submitted to the Commission by December 31, 1979. A draft outline of the water supply element was prepared at the end of FY 1979, awaiting the approval of the Water Resources Commission. A tentative date of August 1980 was set for distribution of the water supply element to the 351 cities and towns in the state.

Ipswich River District Water Supply

The firm of Metcalf and Eddy, Inc. was engaged by the Ipswich River Watershed Commission in cooperation with the Massachusetts Water Resources Commission to investigate appropriate methods of management of the Ipswich River water supply by regulation and allocation of its groundwater well supplies and surface water flow.

The study was completed during FY 1979 and will be released in early FY 1980.

The Ipswich River Basin Water Allocation Study produced the following summary of recommendations:

1. A vigorous policy of water conservation should be undertaken with the objective of preventing further increases in average per capita water consumption.

2. The law with regard to groundwater should be amended to control the use of existing wells and to restrict the development of new wells.

3. A Water Authority should be established to construct and manage new facilities and to coordinate the operation of existing facilities in the basin.

4. Prior to the year 2000, reservoirs with a total capacity of 4.8 billion gallons will be required.

5. The existing allocation of diversions should be modified to reflect a) the storage capacity available to each community, and b) the storage capacity availability to that community, and c) the capacity of the river at the point of diversion.

6. The location of diversions should be reviewed to ensure that the total water requirement upstream of any diversion point does not exceed the capacity of the river at that point.

7. Additional studies are required in order to: obtain additional hydrogeological data, establish the size and location of new facilities, select the most suitable institutional structure for the recommended Water Authority, determine the legislative changes necessary to establish the Authority and to manage the river and fully inform the public of the need for a river management plan.

8. Until the public policy questions are answered, additional information is obtained and legal and institutional factors are resolved, we recommend that:

No new rights to make diversions should be granted.

No additional diversion capacity should be constructed.

No new wells should be constructed within ½ mile of the river or tributary streams. DEQE should authorize summer diversions under the emergency diversion act only to communities with properly operating metering equipment and adequate arrangements to measure and record river flow after the diversion.

Communities which require summer diversions in years of substantially normal rainfall should be required to file a report within six months detailing what actions including water conservation programs they can take to minimize the need for such diversions. Land which would be required by potentially important reservoirs, such as 30-B in Ipswich, should not be used for purposes which would preclude eventual construction of the reservoirs.

208 Plan Review and Certification

The Federal Water Pollution Control Act of 1972 (P. L. 92-500) set goals for abating pollution and attaining a program of water quality management throughout the nation. Section 208 of this Act, as amended, authorized the development of areawide, (regional) comprehensive water quality management plans with funding grants to approved agencies and planning groups.

The National Environmental Policy Act of 1969, (Sect. 102-(2)-(c), requires an Environmental Impact Statement on actions which would significantly affect the environment. The intent of the statement is to provide a broad range of alternatives to the proposed action so that the environmental issues are fully weighed before a final decision is made. The goals of these two federal statutes are combined so that the draft of the regional water quality management plan will also comply with the requirements so as to constitute an environmental impact statement.

The Division of Water Resources has been requested by the Commissioner of the Department of Environmental Management to review and comment on the water quality management plans as drafted and submitted by the planning agencies.

Considerable time and effort has been devoted to the review and analysis of the completed environmental impact statements from several of the designated regional planning groups. In addition, an increasing flow of elements and segments of proposed drafts from non-designated geographic planning areas have been submitted for comment.

The involvement of Division staff in reviewing detailed and voluminous plans and technical background data covering all phases of water quality problems from every region of the State has developed an awareness and insight into current opinion at the regional level of the best management practices in pollution abatement, water conservation measures and the legal/institutional issues of management plan implementation.

Public Lakes, Ponds and Reservoirs

The Division staff has completed the inventory of public lakes, ponds, and reservoirs, including information on access, size and ownership of existing dams. These inventories were published as an appendix to the four regional reports. Coastal, Central, Connecticut River, and Berkshire of the

Massachusetts Water Resources Study.

In the coming fiscal year, the inventories will be published separately in a document that is tentatively titled, "Guide to Public Ponds in Massachusetts." This publication will expand on the inventories included in the regional reports. (See Figure 4).

Basic Data Collection

The Division has responsibility for developing and distributing information on the extent and use of water resources in Massachusetts. These responsibilities include: rainfall recording, stream gaging, snow course surveys, well drilling recording and flood monitoring. The rainfall recording is gathered from a system of rainfall stations operated by individual observers, local, public and private agencies, certain state agencies and the U. S. Weather Bureau. Data on stream flows is available from a system of stream gaging stations operated by the U. S. Geological Survey in cooperation with the Division, the Metropolitan District Commission, and the Department of Public Works. Snow course surveys are recorded during the winter months with measurements provided by individual observers and public agencies. The Division collects data on ground water potentials and regulates the activities of private well drillers through legislation which provides for yearly registration with the Division of those engaged in the business of digging or drilling wells in the Commonwealth. Water well completion reports are sent to the Division offices by well drillers, with information on each well being recorded according to community location. Flood monitoring is accomplished by using the information generated from rainfall recording, stream gaging and snow-course surveys. These data collection responsibilities are an ongoing function which provide the necessary foundation for detailed water supply and flood control planning.

Coordination

Besides the coordination with the various Federal agencies, Corps of Engineers, Soil Conservation Service, U. S. Geological Survey and others, the Division provides a review function over state projects and studies. Through the A-95 and Environmental Monitor review processes, the Division comments on all projects which will have an adverse effect on water resources. The A-95 Circular is published weekly while the Environmental Monitor, published by the Executive Office of Environmental Affairs, comes out periodically. During FY 1979, the Division staff commented on the following projects: Town of Orange, Water System Improvements, Bay View Tower, Town of Hull, Green River interceptor, Town of Greenfield, and the Massachusetts Lake Program, Division of Water Pollution Control.

Contacts between the Division and the regional planning agencies revolved around the 208 Water Quality Management Plans during FY 1979. Division staff reviewed several 208 plans and offered comments on those sections dealing with water resource problems. Future contact will be made between the Division and RPA's in FY 80, concerning the Water Resources Management Planning Regulations.

REPORTS, PUBLICATIONS and DOCUMENTS, FY 1978

Massachusetts Division of Water Resources, Groundwater and Groundwater Law in Massachusetts, 2nd edition, 1979.

U.S. Department of Interior, Geological Survey in cooperation with the Commonwealth of Massachusetts Water Resources Commission, Water Resources of the Coastal Drainage Basins of Southeastern Massachusetts, Westport to Seekonk, 1978, and

Water Resources of the Coastal Drainage Basins of Southeastern Massachusetts, Northwest Shore of Buzzards Bay, 1978,

Water Resources of the Nashua and Souhegan River Basins, 1977 (released in FY 1979),

Streamflow and Water Quality in the Connecticut River Lowlands, 1977,

Map Showing Availability of Groundwater in the Connecticut River Lowlands, 1977,

U.S. Department of Agriculture in cooperation with the Massachusetts Water Resources Commission, Massachusetts Water Resources Study, Water and Related Land Resources of the Central Region, August, 1978,

Water and Related Land Resources of the Connecticut River Region, August, 1978,

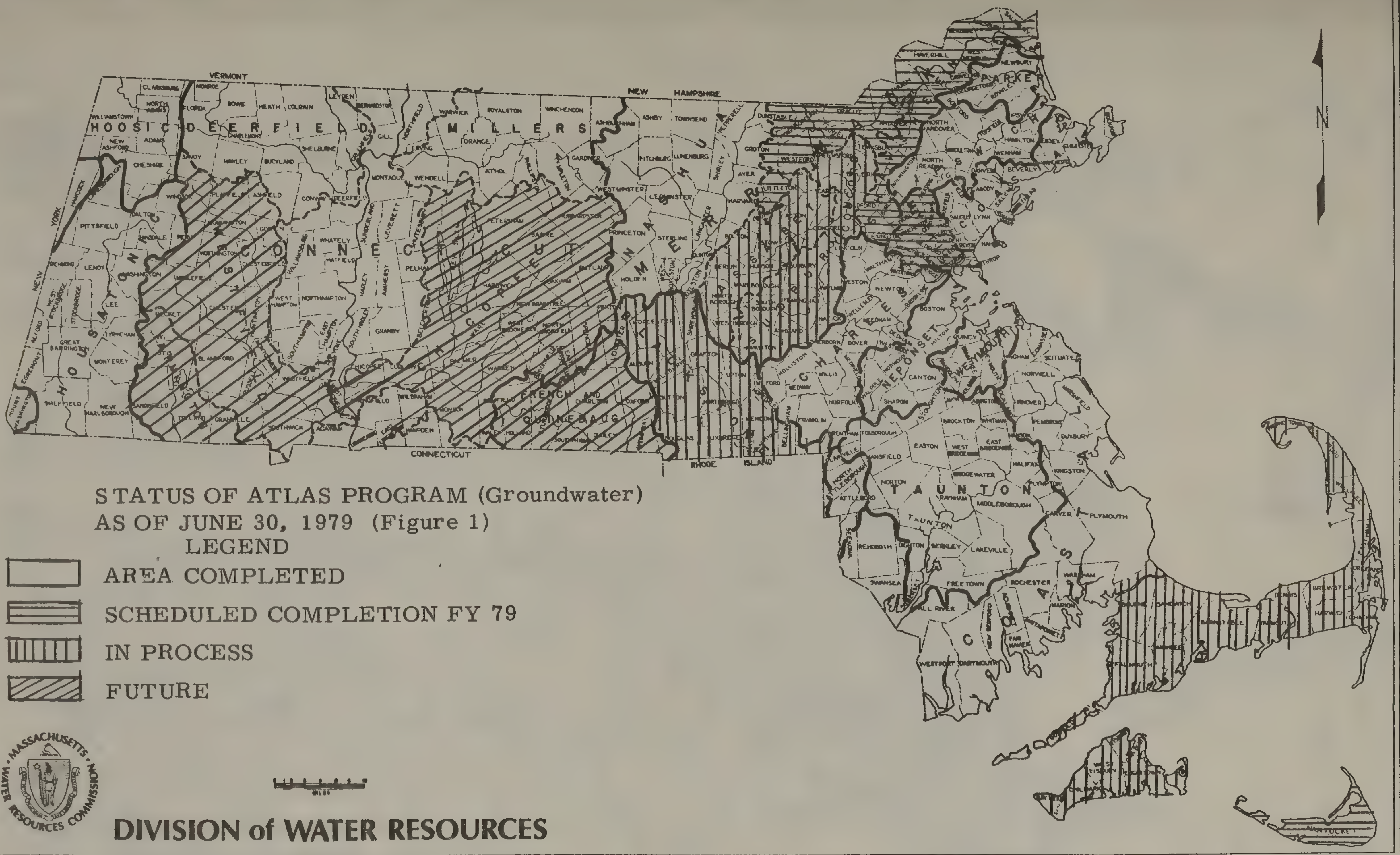
Water and Related Land Resources of the Coastal Region, June, 1978, (released in FY 1979).

RAINFALL EXCESS OR DEFICIENCY (in inches) 1978

	State	Northeast Section	Southeast Section	Central Section	Conn. River Section	Western Section
January	+4.70	+4.18	+5.44	+5.18	+5.17	+4.09
February	-1.34	-1.01	-1.13	-2.11	-1.93	-1.54
March	-1.13	-1.15	-1.19	-1.16	-0.81	-1.01
April	-1.49	-1.27	-1.33	-1.40	-1.99	-2.47
May	+0.32	+0.29	+2.60	+0.44	+0.74	+0.14
June	-0.73	-0.04	-1.75	-0.67	+0.49	-0.34
July	-0.90	-0.95	+0.14	-0.38	-1.73	-1.58
August	+1.75	+0.52	+2.05	+3.68	+1.74	+1.55
September	-2.51	-2.73	-1.75	-2.42	-2.51	-2.78
October	-0.31	-0.21	+0.17	+0.11	-0.98	-0.69
November	-1.28	-1.55	-0.60	-1.72	-1.53	-2.11
December	+0.25	+0.18	+0.10	-0.14	+0.32	+0.19
Total Excess	+7.02	+5.17	+10.50	+9.41	+9.00	+5.97
Total Deficiency	-9.69	-8.91	-7.75	-9.99	-11.48	-12.52
Total Excess or Deficiency for Year	-2.67	-3.74	+2.75	-0.58	-2.48	-6.55

RAINFALL (in inches) 1978

	State	Northeast Section	Southeast Section	Central Section	Conn. River Section	Western Section
January	8.31	7.77	9.28	8.88	9.00	7.25
February	1.91	2.39	2.49	1.38	1.19	1.38
March	2.66	2.64	3.01	2.88	2.87	2.48
April	2.08	2.32	2.61	2.29	1.60	1.22
May	3.94	3.61	6.00	3.92	4.69	4.08
June	2.80	3.27	1.52	2.98	4.44	3.87
July	2.72	2.50	3.12	3.09	2.40	2.87
August	5.76	4.17	6.14	7.33	5.81	5.90
September	1.22	0.86	2.01	1.41	1.28	1.45
October	3.21	3.07	3.70	3.43	2.51	2.74
November	2.58	2.33	3.18	2.34	2.43	1.73
December	4.15	3.89	4.26	3.85	4.01	3.82
Year	41.34	38.82	47.32	43.78	42.23	38.79
Normal	44.01	42.56	44.57	44.36	44.71	45.34

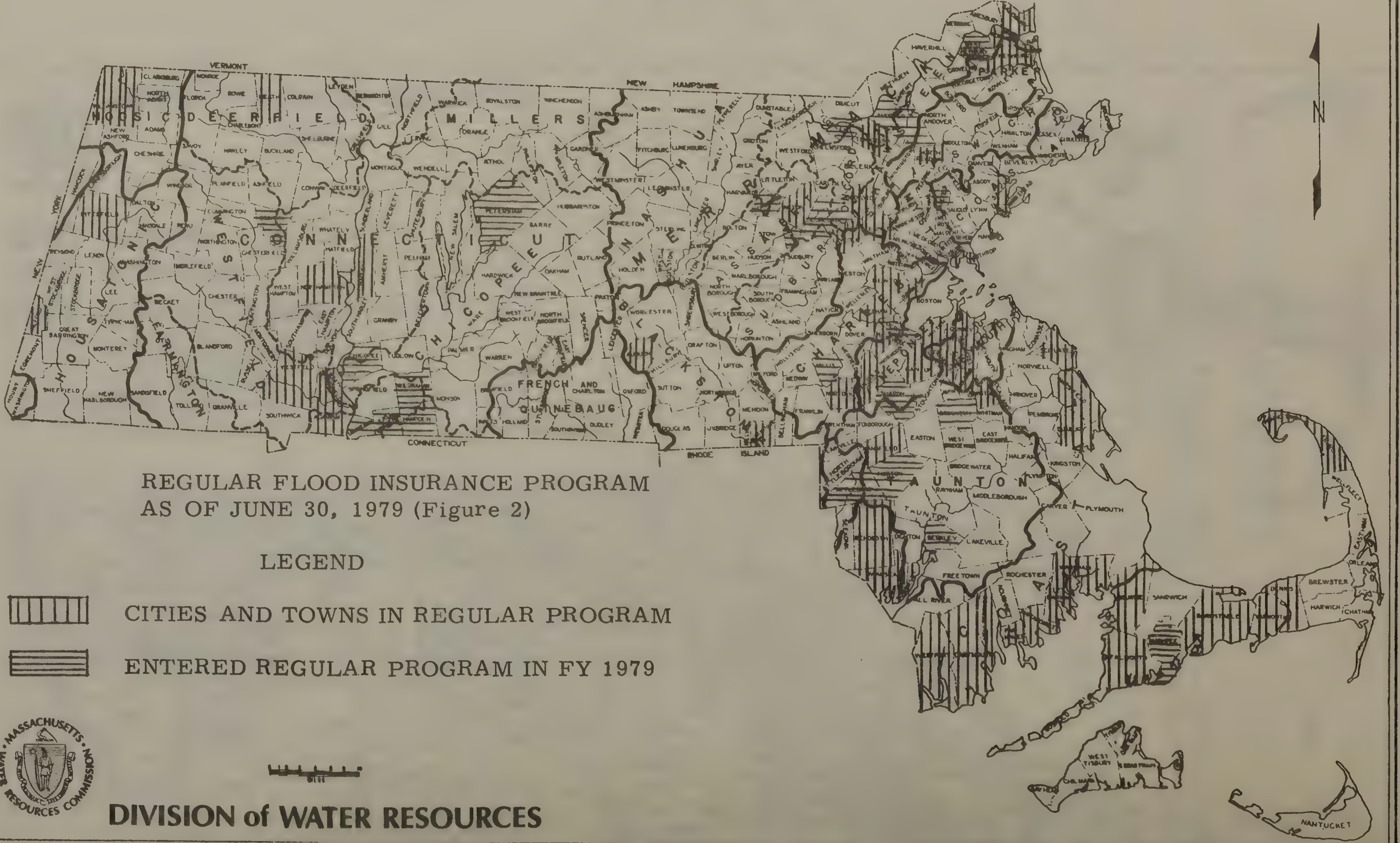


STATUS OF ATLAS PROGRAM (Groundwater)
AS OF JUNE 30, 1979 (Figure 1)

LEGEND

▭ AREA COMPLETED
▤ SCHEDULED COMPLETION FY 79
▥ IN PROCESS
▨ FUTURE

DIVISION of WATER RESOURCES



REGULAR FLOOD INSURANCE PROGRAM
AS OF JUNE 30, 1979 (Figure 2)

LEGEND

▥ CITIES AND TOWNS IN REGULAR PROGRAM

▤ ENTERED REGULAR PROGRAM IN FY 1979

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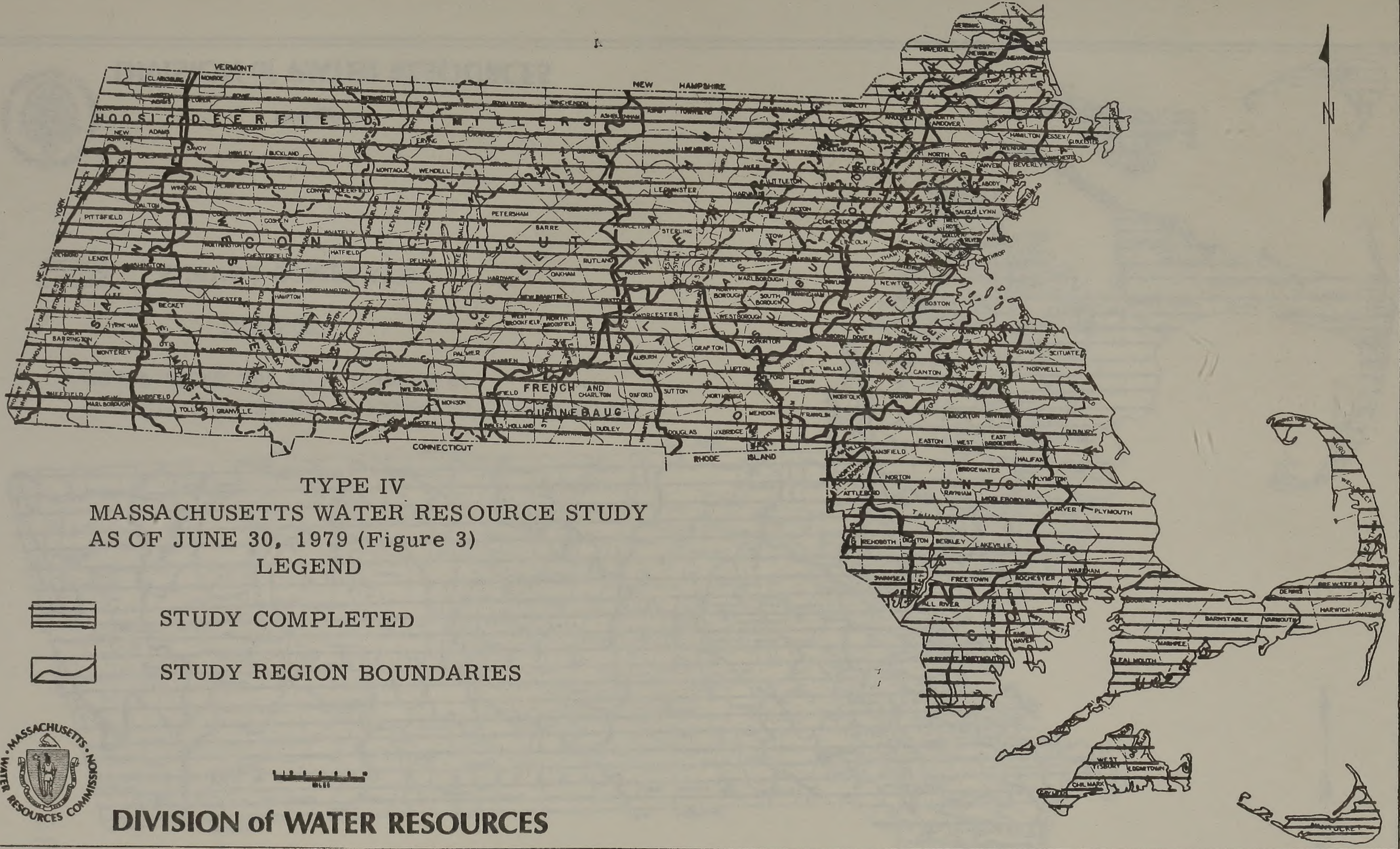
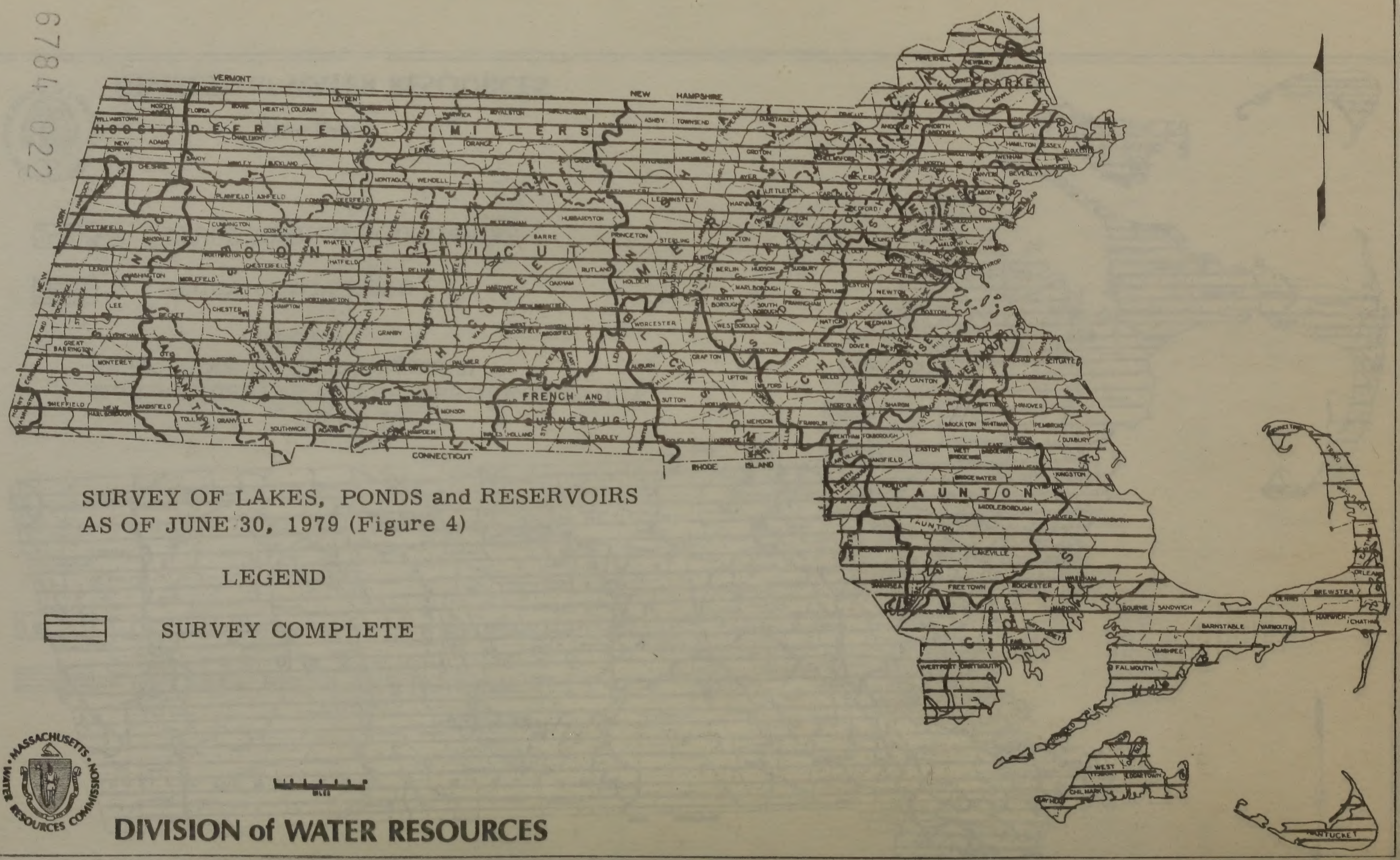


TYPE IV
MASSACHUSETTS WATER RESOURCE STUDY
AS OF JUNE 30, 1979 (Figure 3)
LEGEND

▤	STUDY COMPLETED
	STUDY REGION BOUNDARIES

DIVISION of WATER RESOURCES

6784 022



SURVEY OF LAKES, PONDS and RESERVOIRS AS OF JUNE 30, 1979 (Figure 4)

LEGEND

▤ SURVEY COMPLETE

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